

Antrim Wind 1 – transcript of SEC Committee deliberation - Sound Limits

Excerpted from

<https://www.nhsec.nh.gov/projects/2012-01/documents/130207minutes201201am.pdf>

Page 10-26 {emphasis added}

Cmr Bailey : "The World Health Organization has a couple different community guideline criteria that talk about sleep disturbance. One of them is the 45 dBA that you've heard mentioned before probably, that's also an exterior number. Certainly, this Project would comply with that. There's relatively new night noise guideline that's also been discussed, I think, that the WHO has introduced. It's a European guideline values called "Night Noise Guideline", and that's a 40-decibel value. And, that's a long-term annual average for nighttime sound to permit good sleep and health" -- "good sleep and good health." "This Project also meets that. And, the reason I say that, 40 decibels, on an annual basis, means that some nights, even with the closest homes, you have -- "you might have 40 to 41 decibels at night. But there are many, many nights where you could have sound levels lower than that. Because either the turbines are not spinning at all, in which case the sound level is zero from the turbines, or the turbines are spinning at somewhat reduced power operations, so the sound levels are less than 40. So, when you add it up over the course of a year, every single home in this Project area is going to meet that European guideline, the 40 Night Noise Guideline, which goes to your question of sleep." So, **yesterday, we, I think, made the standard a 40, 40 dB standard, not an annual average standard.** And, if the European guideline is 40 on an annual basis, I think that the standard that we adopted yesterday was stricter than that. And, I wanted to know if we should, now that we understand that, if we should keep it that way or make it an annual average number?

CHAIRMAN IGNATIUS: Thank you for going back and checking on that. Do people -- Mr. Stewart.

DIR. STEWART: Yes. Thank you for that. And, my impression is that we were trying to apply the World Health Organization guideline as a standard for this Project. So, if the WHO guideline is an annual average, then I think that's what we should try to apply to the Project, too.

MS. BAILEY: I agree.

CHAIRMAN IGNATIUS: Anyone with a differing view? Mr. Simpkins.

DIR. SIMPKINS: Well, just a question. How would we monitor that for compliance?

MS. BAILEY: That's a very good question. And, the WHO guideline is really long, and I haven't had a chance to read the whole thing. And, so, --

DIR. SIMPKINS: If a complaint came in, will we have to measure for a year to determine if there's an infraction? Or, I'm just concerned about how that enforcement would --

MS. BAILEY: Right.

CHAIRMAN IGNATIUS: Mr. Boisvert.

MR. BOISVERT: I'm trying to think this through in terms of human behavior and statistics both. In the wintertime, things are closed up, and some of the people may be not resident at the time, going off on

vacation. I understand the assessment. And, so, there would be a period wherein almost any standard would, in effect, be a moot point. And, then, during the summer, people have a tendency to have more windows open and so forth. And, so, you're more sensitive to the outside sound. And, if it were to happen that, during summer months, the noise was fairly significant, so as to bother the sleep and so forth, that will be a problem. ***But, when you take it on an annual average, you would have to have almost a bracket out there. You'd have to have extraordinary high noise levels that everyone would agree would be bad. And, when you put that into the annual average, it probably still would end up being below 40. So, we could have, say, a six-week period in the summer, where, hypothetically, it's very noisy, and most reasonable people would agree this is interrupting sleep, and it's an annoyance, and it certainly is quite negative. But, when you pump it through, pump the numbers through on the annual average, it wouldn't make any difference. It wouldn't be in violation of what we have approved. And, the issue of how you monitor it is separate and difficult. But this could, because, you know, we're buttoned up in the wintertime, make it such that any noise level in the summer, however loud, once you averaged it through, would be below the 40.***

MS. BAILEY: Well, the measurement is always taken outside.

MR. BOISVERT: Yes. Yes. But the complaints come from people who live there. And, they say, "yes, well, it's outside, but I've got the windows open", or maybe they're on a screened-in porch, some people like to do that, but, whatever, they will be tendering the complaints. And, I'm just thinking that that standard sounds good, but how you apply it and how you monitor it and how you average it out, could be a situation where it sounds good, but, in effect, has no application.

CHAIRMAN IGNATIUS: It is interesting that a lower level, because it's measured in a different way, sounds like, as you point out, could result in a far higher incidence on the individual blocks of time. But, because of enough quiet hours to offset that, if it's an annual average, it could really be the opposite of what I think we were looking to do yesterday, which was to consider bringing down the nighttime level. I'm wondering if it makes more sense to go back to the way we've done in the past, with a nighttime level of 45 dBA, or five over, whichever is greater, as has been the case in some recent cases, findings in some recent cases, and not go to -- not do any of the annual averaging testing.

CHAIRMAN IGNATIUS: Ms. Lyons.

MS. LYONS: I think, going to whatever standard that we've set before is probably a good idea, rather than trying to change the monitoring, which is by average. I mean, I'm not sure that the Committee is set up to do that.

CHAIRMAN IGNATIUS: There's absolutely a practical problem, either within the Town, within the Committee, or requiring some new year-round monitoring by the Applicant. Either of those -- all three of those options are difficult, and I don't know what else you'd do. That's the only three ways I can think of doing it. Ms. Bailey.

MS. BAILEY: I'm in the World Health Organization 1999 Night Guideline Standards. And, I haven't read the whole thing, so it's always dangerous. But, when they're talking about night, the level night outside, so, it says "Therefore, 40 dB L night, outside, is equivalent to the lowest observed adverse effect level." And, that's a term that they use throughout the document, "lowest observed adverse effect level for

night noise". "Above 55 dB, the cardiovascular effects become the major health -- the major public health concern, which are likely to be less dependent on the nature of the noise. Closer examination of the precise impact will be necessary in the range between 30 dB and 55 dB, as much will depend on the detailed circumstances of each case." ***So, that sort of gives us a range of where they think the health impacts could come. And, I think they are thinking it's between 30 and 55 dB. That's how I read it.***

CHAIRMAN IGNATIUS: So, --

MS. BAILEY: Maybe we should go to a standard that says "it can't exceed 45 dBA." I mean, they have said they can make that. The other thing that I --

CHAIRMAN IGNATIUS: Are you talking about a nighttime?

MS. BAILEY: Yes. Well, yes, for nighttime, and -- well, I don't know. I was thinking sort of as a compromise to go to 45 for everything. And, there was a little discussion yesterday about "well, what if the ambient sound is louder in the daytime?" And, I recalled, in the Epsilon report, and I haven't gone back to review this, so I'm going to do it on the fly here. But there's a little primer in the beginning of the Epsilon report. So, that's AWE 3, 13A, and Page 2-1. And, it says: "The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a 3-decibel increase (to 53 dB)." So, that's probably why, when you have an ambient sound around 45, which is what they've measured in some cases, and if the generators are producing 45, that the standard is "ambient plus five". So, you know, you don't take the ambient. "Oh, well, if the ambient is 45, and they add another 45, it's going to be 90." It's not. So, I thought that was helpful to remember. ***So, I think it would be reasonable to adopt a 45 dB absolute threshold, and then "ambient plus five", and "the greater of". And, that way we don't have to deal with the annual average issue.***

CHAIRMAN IGNATIUS: And, just a flat limit, day or night?

MS. BAILEY: Yes.

CHAIRMAN IGNATIUS: Others?

MR. BOISVERT: Remind me again exactly what we agreed to yesterday, because the numbers are now crowding in my mind.

CHAIRMAN IGNATIUS: Yes. We had tried a couple different ways. And, what we ended up with was 50 for the daytime, or five over ambient, whichever is greater. And, 40 --

MS. BAILEY: Forty for the nighttime.

CHAIRMAN IGNATIUS: -- 40, or five above ambient, whichever is greater. Assuming that was a similar measurement, I think. And, only this morning, with Ms. Bailey stewing about it overnight, and reading back through that again, realizing that that second nighttime measurement was over an average, annual average, and really a different measurement. So, I guess the options are to stay with 50, with a lower nighttime of 45, or whatever it might be, or to go to one limit that doesn't distinguish day or night, of 45, or five over, you know, each time "the five over" remains unchanged. Or, you know, any other -- any other proposals people may have. And, in other cases, we've had a two-step limit, daytime higher than

nighttime, but there's no mandate that there be two different ones. And, I think, ***out of a concern over people's sensitivity about sleep, that over the years there's been a lower level for nighttime***. But that's not a requirement anywhere, it's just something that sort of has grown up over time. Ms. Bailey.

MS. BAILEY: And, the nighttime has always been 45 previously, the lowest that the Committee has set.

CHAIRMAN IGNATIUS: Mr. Robinson.

MR. ROBINSON: Yes. With this new information, and ***noise being such a big issue with this particular Project***, I would feel comfortable with 45, plus five, for one standard, rather than separate standards.

CHAIRMAN IGNATIUS: Any other comments? (No verbal response)

CHAIRMAN IGNATIUS: According to the testimony of the Applicant, that's within the -- that's higher than the range that they believe they will meet. So, this is certainly not -- it's not that we're concocting something that we know is not possible to achieve. It's actually consistent with the recommendations of the Applicant. All right. Is everyone agreeable to having one standard of being "45 dBA, or 5 dB over ambient, whichever is greater", to be applied 24 hours a day? Mr. Green.

MR. GREEN: Yes. Amy, I just want to make sure I'm clear on this. Yesterday, we said the World Health Organization had a 45 dBA, but it had been changed down to 40 dBA. So, that's average, is that right? Is what I'm understanding?

MS. BAILEY: Well, the testimony from Mr. O'Neal said that the new World Health Organization standard was an annual average number of 40 dBA over the year, and that's going to be really hard to figure out.

MR. GREEN: Okay. And, so, the 40 that they had gone down to was an average for the whole year?

MS. BAILEY: According to Mr. O'Neal, yes.

MR. GREEN: Okay, okay.

CHAIRMAN IGNATIUS: So, are people comfortable? Mr. Simpkins.

DIR. SIMPKINS: Well, just a question. We're saying "45 at night" -- well, we're saying "45 throughout, or 5 over ambient, whichever is greater." I'm wondering, I think that makes sense for the daytime. I'm wondering about the night. ***Some of these ambients were in the upper 20s***. So, by saying "45, or 5 over ambient, whichever is greater", say, it's 27, is there ambient now -- I mean, they could be 18 over at night. So, I'm wondering, should it be 45, but for the day, be "45, or 5 over ambient, whichever is greater"; and, at night, be "45, or 5 over ambient, whichever is less"? ***I'm just concerned that, by saying "whichever is greater", 45, when you look at some of these numbers in some of these locations, it could be considerably over that at night.***

MS. BAILEY: I think, if we were going to adopt a standard like that, we should make it "10", the difference should be allowed to be at least 10. So -- because I think the testimony was, if, and it was Mr. Tocci's testimony, "if there was a difference of more than 10 over ambient, that could cause disturbance." So, if you're going to make it the lesser, I would recommend "10".

CHAIRMAN IGNATIUS: Ms. Lyons.

MS. LYONS: *I just want to be clear that we're trying to set these limits for health. So, while I appreciate that the current ambient is low, I'm not sure that, are we just trying to preserve existing conditions or are we trying to set a standard because of health?*

MS. BAILEY: *I think we're trying to set a standard because of health. And, I think there is some testimony that says, "if the difference is more than 10, health could be affected." And, the World Health Organization says, you know, the concern is between 30 and 55 dB. So, we're just trying to figure out what the right balance is. And, none of us are experts.*

CHAIRMAN IGNATIUS: Dr. Boisvert.

MR. BOISVERT: Mr. Simpkins brings up the question that I brought up yesterday, about that "it should be less than or greater than". And, I think that the 10 dB above ambient I think is quite reasonable, is a longer stretch. But, if it's -- *if it is relatively quiet, and it goes 10 decibels above that, that is enough to disturb people, I suspect, from the testimony. It's my understanding, is a noticeable enough difference that it would disturb people. And, I think that is the key on the health front. That, if it disturbs someone, raises stress levels, interrupts sleep, that has a health effect. And, I think that we -- we're talking about "health" in this portion of deliberations, and I think we need to focus on the "health" part.* I think that is a reasonable to use. Others might argue it's too much, but I think it's reasonable. I have no problem with it.

CHAIRMAN IGNATIUS: So, the idea would be to have a daytime standard and a nighttime standard that not only are different numbers, but are different calculations. And, let me see if I got this right. That daytime it would be "the greater of 45, or 5 over ambient"; and the nighttime standard be "the lesser of 40, or 10 over ambient"?

MS. BAILEY: Forty-five.

CHAIRMAN IGNATIUS: Forty-five, or ten?

MS. BAILEY: Right. That's the proposal. So, let's think about what the effect of that would be. That would mean that, *if Mr. Tocci's calculations are correct, and the ambient is around 15 at night, the standard would be 25 dBA. And, there's testimony that indicates that would certainly not have any health impact. I think there's testimony that suggests that less than 30 would have no health impact.* So, if it were only allowed to have 25 dBA of sound, and the turbines generally, on average, produce 35, 33ish, would that mean they couldn't run at night? And, is that what we want to impose?

CHAIRMAN IGNATIUS: I think -- that's my concern. I think that we're trying to figure this out for all the best of reasons, but we're -- the practical impact, I don't want to create a standard that is effectively saying "you can't operate". If that's our conclusion, then it should be our direct conclusion, not a sort of indirect consequence of picking a number. And, that's a fair conclusion people can reach, I'm not saying you can't come to that answer. But we ought to be certain that that is what we're saying. That we don't want them to run at night in any way that would produce sound greater than X. And, because we're trying to anticipate how all of this would play out, I might have a little fear of the unintended consequences here, that we -- we just may not have thought through all of the different variations in the way it might result.

MS. BAILEY: The other thing we could think about is establishing 40 dBA at night, rather than the annual average. Because, I mean, the World Health Organization says "40 dB L night, outside, is equivalent to the lowest observed adverse effect level for night noise." So, rather than having a standard that says "ambient, plus 10", which might end up being 25, we could get to 40, and just make that the standard.

DIR. STEWART: I'm in another place, --

MS. BAILEY: Okay, good.

DIR. STEWART: -- *excuse me, in the WHO. And, it says, similar to what Kate has, the lowest -- "the LOAEL", which is the "lowest observable adverse effect level", "of night noise, 40 decibels, can be considered a health-based limit of the night noise guidelines necessary to protect the public, including most of the vulnerable groups, such as children, the chronically ill, and the elderly, from the adverse effect" -- "health effects of night noise." So, that seems to be the health-based standard that WHO has established. Now, I haven't found where it says "annual", but I believe you.*

MS. BAILEY: I haven't found that either. That was Mr. O'Neal's testimony, but I haven't looked --

DIR. STEWART: And, Mr. Tocci said nothing about "annual", and O'Neal did. So that, I mean, that becomes the health-based value, if we're subscribing to the WHO guidelines. Now, how you apply that, I'm not so sure. But this most likely is an annual, but, again, I haven't found it in the guidelines yet. I will continue to look

CHAIRMAN IGNATIUS: Well, you know, another way to do this is to -- it's like on one hand, on the other hand, and on the other hand, and how many hands do we end up with here. *But another way to do it would be to have a daytime and nighttime limit, not get into the average over time, not get into a lesser versus greater. Keep it pretty straightforward, but have it step down. So, that 45 in the day, or 5 over; and the nighttime 40, or 5 over. That's similar to the three-step standard that was adopted in Groton. Where, for the campground, there was a lower level within that area that it couldn't exceed 40, or five over, I think. And, so, here, to continue a daytime/nighttime differential, but just to bring them down to be 45 daytime and 40 at night, plus the five over test, the greater of those two, for the two times.*

MS. BAILEY: I think, based on what Mr. Stewart and I have found in the World Health Organization guidelines so far, that would make me very comfortable in concluding that this won't have an adverse effect on health as a result of sound.

CHAIRMAN IGNATIUS: Any other response? (No verbal response) CHAIRMAN IGNATIUS: How about a show of hands of who would be supportive of a two-step standard, daytime 45 dBA, or 5 dB over ambient; and a nighttime standard of 40 dBA, or 5 over ambient? Show of hands, who would support that? (Show of hands.)

CHAIRMAN IGNATIUS: Any opposed to that? (No indication given.)